4. Wildlife

This section consists of several components that address various aspects tied to wildlife on the Chippewa National Forest. Included in this section are discussions on Regional Forester Sensitive Species (RFSS), Management Indicator Species (MIS), Threatened and Endangered species (T&E), Management Indicator Habitats (MIH), patches, and breeding birds.

Key Points for RFSS, MIS and T& E

- From 2005-2010, all management activities were completed with 2004 Forest Plan direction for RFSS, MIS, and T&E species. Projects that were analyzed either had no impact or were not likely to cause a trend to federal listing or loss of viability on the Chippewa National Forest. In addition, all Forest Plan Standard and Guidelines were successfully implemented on the ground with the exception of the 70% canopy closure standard within the post fledging areas for the goshawk and red shouldered hawk. The implementation of this standard was inconsistent across the Forest.

- From 2004 -2010 the Forest contributed toward the conservation and recovery of both the Canada lynx and gray wolf through habitat and access management practices, collaboration with other federal and state agencies, as well as researchers, tribal bands and non-governmental partners.

- The Forest has implemented mitigations for rare plant populations on all major projects on the Forest. Coarse-filter habitat protections provide habitat for most sensitive plants. Goblin fern remains a challenge as impacts from earthworms continue to expand through goblin fern habitat.

- The Monitoring and Inventory Survey Team continue to make improvements to the screening process in surveying various RFSS on the Forest. This improved screening process has made the surveys on the Forest much more effective in detecting locations of RFSS. The consistent increase of new locations added each year also suggests that our understanding of where and when to search for these species is improving.

- Eighteen new species were added to the Chippewa RFSS species list as of December 2011.

- No work has been done to achieve the objective of restoring habitat for sensitive species.

A. Regional Forester Sensitive Species (RFSS)

Analysis for RFSS plants in the Forest Plan FEIS relied on a habitat conservation approach rather than on direct effects to known populations of RFSS plants. Many of the listed species have very specific habitat needs so prediction of the effects of the Forest Plan on RFSS was tied to projected increases or decreases in various habitat types due to human activities on the Forest. The assumption is that if habitats are stable, then RFSS populations are stable. If habitats are degraded, then RFSS populations may become imperiled. Quantification of effects to habitat is accomplished through stand surveys, stocking reports and other broad scale assessments of vegetation on the forest.

Monitoring Question

To what extent is Forest management contributing to the conservation of sensitive species and moving toward short term (10-15 years) and long-term (100 years) objectives for their habitat conditions?

Results

The Forest surveys for sensitive species every year, primarily in the area of upcoming vegetation management projects. Results from the surveys drive the District interdisciplinary teams in project design through development of mitigation measures of those species identified. In addition, the Forest has an active monitoring strategy in going back to known nests on a annual basis to determine if any changes may have occurred due to forest management or other factors. The monitoring results help confirm the effectiveness of the Forest Plan standard and guidelines and protection measures.

From 2005-2010, the Chippewa NF Monitoring and Survey Team (MIST) were responsible for the screening of habitat and completion of surveys for all forty nine RFSS within all proposed project areas. Over the six years, an average of 13,500 acres were surveyed on the Forest.
A total of 1139 new RFSS/TES locations were detected and added to the Forest records. Additionally, records were removed; removals occur for a variety of reasons including the record no longer exists (e.g. a tree supporting an eagle nest falls), the record was faulty (e.g. improperly recorded location; or a duplicate record. Efforts were also made to review and update old data to accurately reflect the locations of RFSS species and potential changes to the habitat.

Table 4.1 Summary of RFSS and TES additions to Forest records from 2005-2010.

SUMMARY OF 2005-2010 RFSS/TES ADDITIONS	
Category	**Number Added**
Bird	420
Plant	693
Mammal	10
Insect	7
Fish	1
Reptiles/Amphibians	8

The number of new locations recorded in the TES species database has increased each year over the past 5 years. The consistent increase of numbers added each year also suggests that our understanding of where and when to search for these species is improving through risk assessments completed by Chippewa Staff.

RFSS Plant Surveys

2010 and 2011 saw a marked increase in new RFSS plant detections on the Forest. There were 244 new detections of plants to date in 2011, including 142 new goblin fern occurrences.

Two RFSS continue to serve as "success stories" for the Forest survey program. Twenty clustered bur-reed locations were detected which constituted an increase of 19%. In 2004 there were only 19 known records on the Forest, but at the end of 2009 there are 125 known records. CNF staff joined LLBO DRM to monitor the Forest's lone one-flowered broomrape (*Orobanche uniflora*) location. The 2009 - 2011 effort succeeded in re-detecting the species and tracking expansion of the species in the vicinity.

Goblin Fern Monitoring

Only limited direct monitoring of RFSS plants populations to document the effects of Forest Plan implementation has occurred. One formal study (Gallagher 2011) was conducted to evaluate the efficacy of Standard S-WL-7. S-WL-7 requires winter harvest and retention of 70% canopy cover when timber harvest occurs in habitat for goblin fern (*Botrychium mormo*). This study found that the studied populations did not show a measurable decline compared to a control population; however the experimental population was thought to be only indirectly affected by timber harvest because goblin fern populations were only located in areas of clumped retention.

Goblin fern remains a challenge as impacts from earthworms continue to expand through goblin fern habitat, while no remedies for spread of established earthworm populations are known. Although new goblin fern populations continue to be found, the suspicion that previously detected goblin fern populations are being eliminated by earthworms needs to be confirmed or refuted.

Restoring habitat for sensitive species

The Forest Plan has an objective "to enhance or restore high-quality habitat on a minimum of 20 (average of 2 sites per year) known sites of sensitive plants. Priority for habitat improvement will generally be for those species and habitats for which

a. Proactive Management (versus protection based on avoidance of any management activities) is needed to maintain species and
b. Coarse filter management does not provide adequate maintenance or restoration. (O-WL-31, FP p.2-31).

No work has been done to achieve this objective. Most sensitive species habitats are best maintained through avoidance of management activities and coarse filter management. One possibility is to place deer exclosures around populations of Canada yew (*Taxus canadensis*) which is heavily browsed by deer. Effective implementation would require robust permanent fences. Another possibility is brushing to help disturbance-dependent species such as *Botrychium simplex, Botrychium pallidum, Botrychium rugulosum* and *Botrychium oneidense* to eliminate

encroachment from trees and brush that shade them out. Watershed work such as culvert or stream improvements may benefit some aquatic species. Specific opportunities have not been identified to date.

Implications

From 2005-2010, all management activities were completed with 2004 Forest Plan direction for Regional Forester Sensitive Species. Projects that were analyzed either had no impact or were not likely to cause a trend to federal listing or loss of viability on the Chippewa National Forest. All Forest Plan Standard and Guidelines are being implemented for RFSS and appear to be within the scope of the FEIS environmental effects and protection of these species appears to be adequate. Additional mitigation measures by extending the nest buffers for eagle nest locations have been implemented on various projects to minimize disturbance during nesting periods. These measures exceeded the Bald Eagle Protection Act standards.

The Monitoring and Inventory Survey Team continue to make improvements to the screening process in surveying various RFSS on the Forest. This improved screening process has made the surveys on the Forest much more effective in detecting locations of RFSS. The consistent increase of new locations added each year also suggests that our understanding of where and when to search for these species is improving. In addition, the results from our monitoring assist other land managers from the MDNR, and LLBO in managing their respective lands.

New Issues

Goblin fern has been the focus of plant conservation efforts for over a decade. However, newer interpretations of suitable habitat based on a wider habitat preference than was previously known and increased numbers of known populations resulted in significant loss of harvest volume on two proposed timber harvest projects. This led the forest products industry to question the validity of S-WL-7 for protection of goblin fern in light of increasing number of known populations. The Forest recently evaluated and recommended that goblin fern be retained on the RFSS list citing loss of habitat due to invasive earthworm impacts on goblin fern habitat.

Eighteen new species (13 plants, 3 birds, 2 fish) have been added to the RFSS list as of December 2011. Distribution and abundance as well as local habitat occupation patterns of these species are not well known on the Forest. Until more knowledge and experience is gained in dealing with these species, important opportunities for inventory and conservation of these species may be missed.

The Minnesota DNR is in the process of evaluating sites throughout the state as areas of Moderate, High and Outstanding Biodiversity Significance. The Minnesota County Biological Survey is collecting data from the field to assist in making these designations. Surveys are ongoing or only recently completed in Cass, Beltrami and Itasca counties and no designations have been made by DNR for Biodiversity Significance Sites on the Chippewa National Forest, although it should expect that some areas within the boundary of the CNF both on and off of NFS lands will be designated.

Since it is unknown what areas will be designated, what level of ranking they will be designated, or what species or biological communities will drive these designations, the appropriate

management actions or restrictions on management actions these designations would require cannot be determined at this time. Continued communication on these matters with DNR is important.

It is expected that possible future designation of biological diversity areas within the CNF would be in keeping with DNRs conservation goals and objectives for the areas. Changing the management area for State Biodiversity Significance Areas to Unique Biological Areas is one option. This would require an amendment to the Forest Plan. Another option is to consider the state designation on a case-by-case basis as management activities are proposed and modify management as deemed necessary by the project biologist to keep management in tune with State biodiversity goals and objectives.

B. Management Indicator Species (MIS) and Threatened and Endangered (T&E)

Since there is overlap with the MIS and TES species, they are discussed together in this subsection. A full report has or additional information on rationale for selection of MIS and details of the monitoring activities and is available upon request.

Monitoring Questions

What are the population trends of management indicator species and Threatened and Endangered Species?

To what extent is Forest Management contributing to the conservation of threatened, endangered, and sensitive species and moving toward short term (10-15 years) and long-term (100 years) objectives for their habitat conditions?

Results

This resource area monitors and evaluates population trends of designated Management Indicator Species (MIS). Management Indicator Habitats (MIH) were also identified for the Chippewa National Forest and along with MIS will be used to analyze the potential effects of management practices on wildlife habitats and populations.

MIS are defined as species monitored over time to assess the effects of management activities on their populations and the populations of other species with similar habitat requirements (Forest Service Manual 2620.5). The rationale underlying the MIS concept is that by managing for and conserving the habitats in which MIS occur, other species that depend on these habitats would also be provided for. The Chippewa National Forest (CNF) has identified four MIS: gray wolf, bald eagle, northern goshawk and white pine. All four of these are species of high public interest, address major management issues, and can be practically monitored.
The gray wolf and bald eagle were designated as MIS under the 1986 Land Management Plan for the CNF. As MIS, they have been monitored for the past 20 years. The northern goshawk and white pine are new MIS.

Gray wolf (MIS & T&E)
Wolf populations in the western Great Lakes have exceeded federal recovery goals for numerous years. This information led to actions to remove the species from the federal list of threatened and endangered species, and in February 2007, the western Great Lakes gray wolf population, which includes Minnesota, was de-listed. However, in September 2008, a Federal Court vacated the final rule and remanded the decision by the USFWS to de-list the gray wolf. These rulings to list, delist and once again list the gray wolf as a threatened species under Endangered Species Act from 2005-2010 on the Chippewa NF did not impact the wildlife or other Chippewa programs.

Data collected by the MDNR in 2007-08 indicated for the first time since consistent surveys were initiated in the late 1970s, total wolf range in Minnesota did not increase, and estimated occupied range declined only slightly. The 2007/08 population size estimate (2,921 wolves) is slightly smaller than in 2003/04; however, confidence intervals for the last two population estimates are largely widely overlapping. The MN DNR concludes that there has been no significant change in the distribution or abundance of wolves in Minnesota since 1997. In 1997-98, the survey estimated 2,445 wolves ranging over roughly 34,000 square miles of the state. This current wolf population estimate far exceeds the recovery plan goal of 1250-1400 wolves in Minnesota, as well as the MN DNR wolf plan's minimum population goal of 1,600 wolves to ensure the long-term survival of the wolf in Minnesota.

Currently there are no requirements by the USFWS for the MDNR and Chippewa NF to complete annual wolf surveys. The MDNR, however, completes wolf abundance surveys Statewide every 4-5 years to monitor the status. Distribution and abundance surveys of wolves in Minnesota will be once again completed by the MDNR in 2011/12. Details of wolf survey methods, results and discussions can be found in the MN DNR report entitled "Distribution and Abundance of Wolves In Minnesota, 2007-08" authored by Erb and Benson.

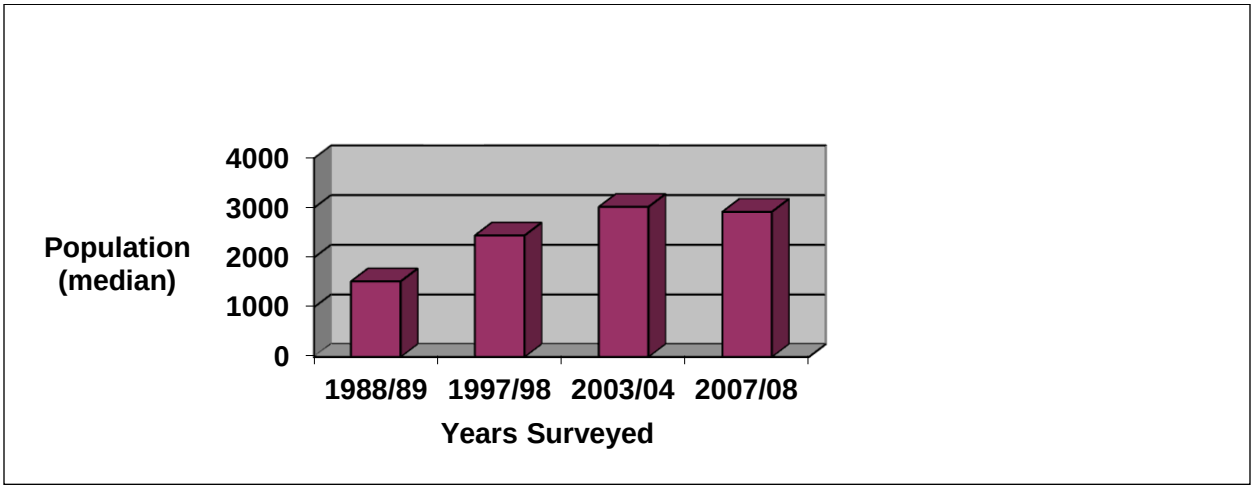

Figure 1 Minnesota Estimated Wolf Populations

In recent years, there has been a gradual, long-term increase in the number of wolves in Minnesota. The Chippewa National Forest is considered to be critical habitat for the wolf and plays an important role in maintaining and sustaining wolf populations above the recovery goals

due to a considerable amount of suitable habitat for the species and its prey. Forest Plan direction to decrease road densities and provide habitats for prey species may have helped maintain the conservation and recovery of the gray wolf. From 2004-2010, the Forest closed (decommissioned) 63 miles of system roads on the Forest. The Forest will continue to decrease road densities across the Forest through administrative closures and road decommissioning efforts that will continue to improve recovery goals for the gray wolf.

Bald eagle (MIS)
Bald eagle nest monitoring has changed since Forest Plan revision in 2004 as most nests are now monitored biannually. Activity flights were last completed in 2005 and 2007. In 2005, 135 of the 351 nests surveyed were active. In 2007, 113 of the 259 nest surveyed were active.

The most recent surveys in 2009 resulted in 69 active nests of the 336 nests checked. The 2009 surveys were aimed at determining the status of known nests that have not been recently surveyed so the results for 2009 are not as complete as in some past years. Due to the variability in the number of nest monitored each year, it is difficult to determine what the bald eagle population trend is since Forest Plan revision (2004).

Survey data from 1987 to 2007 (Figure 2), indicate a population that peaked in the mid-1990's and then dropped to within about 120-160 active nesting pairs. During this time period the CNF averaged 153 active nesting pairs per year. It appears that the number of active territories on the CNF is decreasing. This may be in part due to less frequent monitoring and the level of intensity of the monitoring efforts, or the loss of large pine nest trees to decadence or blowdown. It may also be because habitat on the CNF may have reached its carrying capacity to support bald eagles. Bald eagle nest activity will continue to be monitored as time and funding allows. Final data review, compilation, and reporting is planned for completion by September 20, 2010. At the landscape scale, Forest Plan Objectives for the red/white pine MIH are to increase these forest types which would improve bald eagle habitat over the long-term.

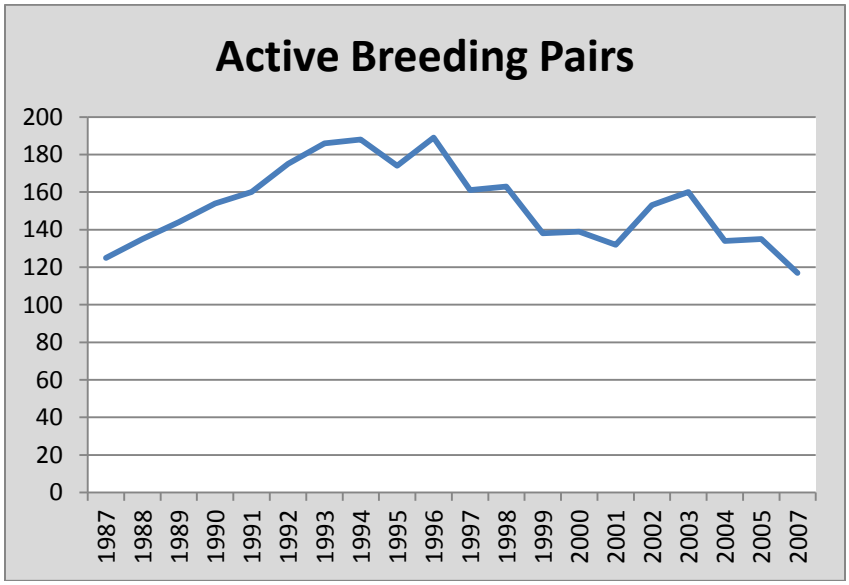

Figure 2. Active bald eagle nests on the CNF from 1987-2007.

Northern goshawk (MIS)
The CNF Forest Plan includes an objective of sustaining 20-30 breeding pairs of northern goshawks. Over the past fifteen years, the cumulative number of known goshawk breeding territories has risen steadily on the CNF, from 11 known in 1996 to 56 known in 2010. This is generally believed to be a product of increased activity in goshawk habitat and a higher interest in monitoring goshawk populations, nesting activities and habitat conditions in northern Minnesota. Monitoring data collected from 2005-2010, the number of known active territories ranged from 12-21 breeding territories and 7-12 successful breeding territories. Based on the monitoring efforts and results across the Forest, the number of breeding pairs falls below the objective established in the Forest Plan. The table below provides breeding territory information over the past fourteen years.

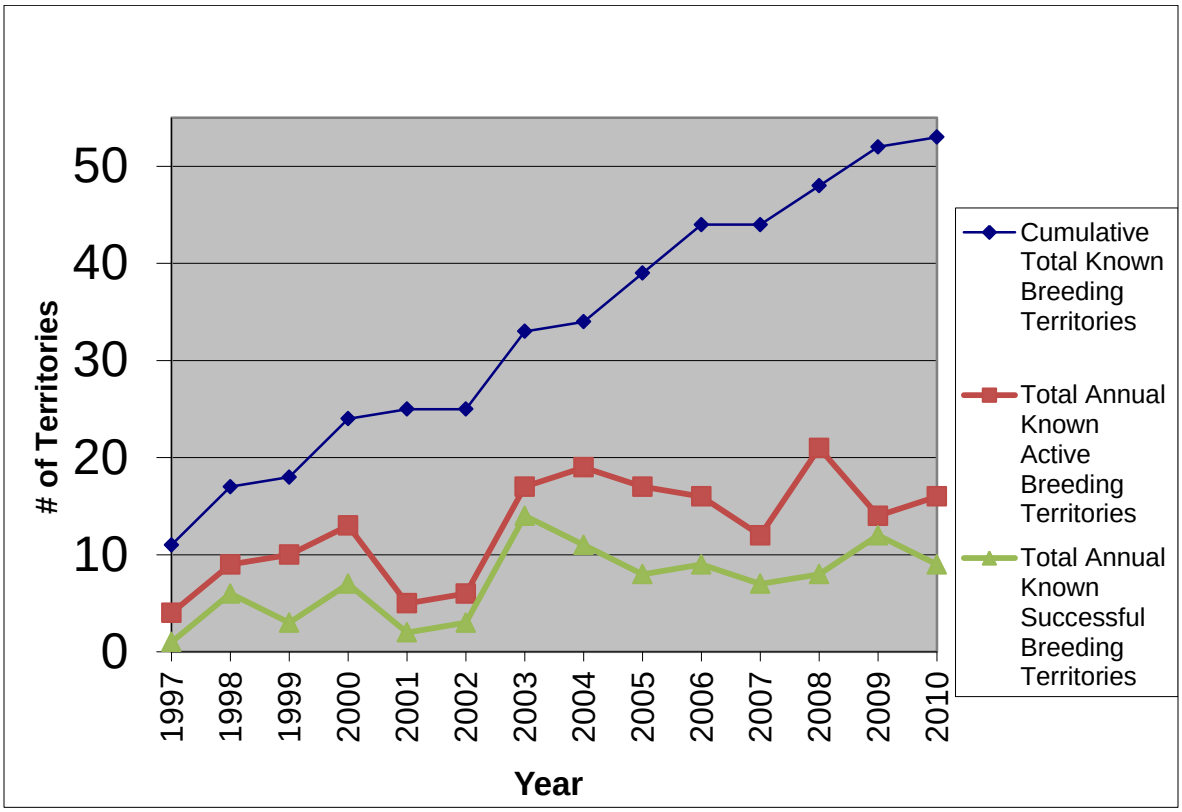

Figure 3. Breeding Territory Information for Northern Goshawks, Chippewa National Forest 1997-2010

The population dynamics of the goshawk in northern Minnesota are not clearly understood at this time. The data provided is primarily based upon goshawk territories discovered during on-going field operations on the CNF. Nest counts for goshawks are steadily increasing as new nests are found each year. However, records have not been updated to remove the nest count as nests are gone and/or trees fall in territories where other nests are present. Hence, the nest numbers reported in the following annual summaries misrepresent the count of actual existing nests on the Forest.

Results from the Bioregional Goshawk Monitoring Project were made by applying the assumptions in the protocol. Bruggeman et al. (2009) estimated that there were 5,184 ± 199 (standard error) PSUs with goshawk occupancy regionwide in 2008, which comprised approximately 27% of the PSUs in the survey area. For the Chippewa, this estimate is 271 ± 146 occupied PSUs. Following the monitoring protocol two goshawks were detected across all PSUs surveyed on the Chippewa.

Pending simulation modeling, a working estimate of breeding pairs, known and unknown, can be derived from Bruggeman et al.'s work using the known combined territory size of 6454 ha (Boal et al. 2001) for breeding goshawks on the Chippewa to correct for the larger home range size observed on the Chippewa compared to the bioregional monitoring methodology. Applying a 10.7 density correction (6454/600) to the report's assessment of 271 occupied PSUs (271/10.7), this places the Chippewa's estimated breeding population at around 25 pairs (range: 12 pairs to 39 pairs). The number of known active territories on the Chippewa in 2010, at 15 falls into the lower end of the range for this estimated breeding population.

Currently, there is no systematic assessment of goshawk population trend or stability on the Chippewa or in the Western Great Lakes Region. Without trend data it is difficult to determine if the goshawk population is increasing, decreasing or is stable. The forest breeding population likely falls within the range of 12 to 39 breeding pairs based on estimated habitat occupancy on the Chippewa (Bruggeman et al 2009) and known territory size (Boal et al 2010). Nest activity, success, and productivity are variable by year.

Based on the continued implementation of Forest Plan direction, the number of breeding pairs and suitable habitat conditions are expected to increase over time with full implementation of the Forest Plan. Habitat within known nesting and post-fledging zones is expected to be maintained per Forest Plan Standards and Guidelines through the current planning period. Uncertainty over consistent guideline implementation, the distribution of habitat outside of PFAs, and forest management on other ownerships pose a risk to this species.

Canada Lynx (T&E)

From 2000-2006, a total of 10 (5 probable, 5 unverified) lynx sightings were report within the Chippewa NF. One verified sighting was documented immediately adjacent to the Northeast Forest boundary. Most recently, a possible lynx sighting was reported in 2010 within the southeast forest boundary near Remer. The sighting was never verified.

White Pine (MIS)
The Forest is regenerating white pine at a frequency approximately 2.5 times that which is found on the landscape (FS administered lands).

Table 4.2. Frequency of white pine (WP) on regeneration and non-regeneration plots.

	Total Plots	Plots with WP	Frequency
Regeneration Plots	5,556	1,493	27%
Non-regeneration Plots	35,705	3,959	11%

Regeneration harvests include clearcuts, shelterwood cuts with reserves, and selection harvests. Regeneration methods include planting of seedlings, artificial seeding and natural seeding. Overstory trees are present on some of the regeneration plots, depending on the type of harvest and location of the plot. White pine is often a reserve species in harvests.

Table 4.3 displays the number of white pine seedlings planted each year during the monitoring period.

Table 4.3. White pine planted.

Year	WP Seedlings Planted
2004	218,500
2005	194,000
2006	221,350
2007	168,200
2008	137,000
2009	214,810
2010	289,000

Implications

Goshawk
Currently, there's inconsistency implementing the G-WL-24 across the Forest. G-WL-24 requires management acitivities to maintain suitable habitat conditions on a minimum of 60% of the upland forested acres in post-fledging areas. Suitable habitat includes jack pine and spruce/fir forest types>25 years and all other forest types >50 years with semi-closed to closed canopy (>70%). Aspen and birch forest types 25-50 years may be considered suitable if field review verifies that foraging habitat trees average 50 feet tall and canopy closure is 50-70% or greater.

Past field monitoring reviews have indicated that interpretation on how to measure canopy closure across the Forest is inconsistent and in certain cases may not be meeting the guideline. The Forest may need to work with Northern Research and Universities in establishing a consistent method that will ensure the 70% closed canopy is implemented. Future monitoring at both the nest site and landscape scales will confirm this expectation.

Canada Lynx
The National Forest analyzes potential effects to lynx habitat at the project level using the Lynx Analysis Unit scale (LAU). LAU are the smallest landscape scale analysis units upon which direct, indirect, and cumulative effects analyses for lynx will be performed. LAUs encompass lynx habitat (on all ownerships) within the administrative unit that has been mapped using specific criteria to identify appropriate vegetation and environmental conditions.

From 2004-2010, the Chippewa fell within the LAU Forest Plan thresholds for the vegetation management projects on all three districts. However, recent project analyses have indicated the Forest getting closer to these thresholds for a small number of LAU's at the project level. Where this is occurring, the District Biologists are altering projects to ensure the Forest meets these requirements.

All projects are well within the Forest Plan objectives, standard and guidelines and meet the Lynx Conservation Assessment and Strategy which was incorporated into the 2004 Forest Plan. Projects were successfully developed to reduce or eliminate adverse effects by designing them to; 1) maintain, protect or improve habitat, and/or 2) reduce the risk of mortality through Forest road and trail management.

Currently, there is no Federal designated critical lynx habitat designated within the Chippewa NF. Informal consultations with the U.S. Fish and Wildlife Service confirmed that no projects warranted a "may affect" determination, which would have triggered "formal" consultation and a USFWS biological opinion to reduce or eliminate adverse effects to both species.

Please refer to the Recreation section and the discussion on "Over the Snow Designated Trail Routes" on the evaluation and effects of winter trails to lynx.

White Pine
Forest Plan objectives to "increase the amount of white pine to amounts more representative of native plant communities by planting or naturally regenerating white pine trees in white pine forest types and in other upland deciduous, mixed, and conifer forest types" (O-WL-33, FP p.2-32) is being met.

Recommendations for RFSS, MIS and T&E species

- Conduct monitoring trips to determine the effectiveness of past road closures and decommissioning projects on RFSS & T&E species
- Continue to gather site specific data on all RFSS and T&E species at the pre and post projects levels.
- The Forest should continue to support bioregional monitoring efforts to better understand population dynamics for the goshawk. These results will assist Chippewa Biologists in determining whether or not the Forest Plan S&G's are effective and improve future management decisions relative to the goshawk.
- Continue to input all RFSS detections and surveys in the NRIS corporate database.
- The Forest needs to establish a consistent, systematic method that will ensure the 70% closed canopy is implemented at the project level. Improvement to implementing this standard and guideline includes more on site visits during the initial reconnaissance stage to determine base line canopy closure and determination whether this standard and guideline is implementable.
- Validate if the habitat approach is effective at stabilizing populations of RFSS plants.
- Determine if protections are needed for RFSS plant species other than goblin fern.
- Determine extent and severity of effects from invasive species on RFSS plants.
- Determine which species are most at risk from management activities and other things in our control.

- Revisit at least 20 known populations of *Botrychium mormo*, verify presence/absence and assess habitat quality, particularly current levels of worm infestation.
- Perform soil analysis on sites to determine abundance of *Botrychium mormo* gametophytes and immature sporophytes on five sites. These are life stages that are not detectible by conventional field survey
- To better characterize the effects of timber harvest on goblin fern, visit at least five goblin fern locations within or in proximity to harvest units.
- Identify opportunities to restore habitat for sensitive species.
- Continue communication with DNR on the biodiversity significance of sites and as designated develop a strategy consistent with the Forest Plan to maintain the integrity of these sites.

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